

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (Previously Presented): A process for the preparation of a polymerizable dental composition comprising the steps of

(a) preparing a liquid mixture comprising

(i) 1 to 99% w/w of a hybrid monomer component containing at least one hybrid monomer compound having one hydrolysable siloxane group and at least one polymerizable organic moiety, and

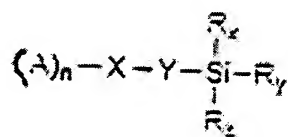
(ii) 99 to 1% w/w of a monomer component polymerizable with the polymerizable organic moiety of the hybrid monomer compounds; and

(b) adding at least a stoichiometrically sufficient amount of water to the mixture to hydrolyse the hydrolysable siloxane group of the hybrid monomer compound and to form spherical polymerizable nanoparticles having an average particle size of from 1 to 100 nm dispersed in the monomer component, whereby the nanoparticles have a structure with Si-O-Si bonds and peripherally exposed polymerizable organic moieties.

Claim 2 (Previously Presented): The process according to claim 1, wherein nanoparticles have an average particle size of from 1 to 20 nm.

Claim 3 (Previously Presented): The process according to claim 1, wherein nanoparticles have an average particle size of from 1 to 5 nm.

Claim 4 (Previously Presented): The process according to claim 1, wherein the hybrid monomer compound is a compound of the following formula (I)



wherein

A is a polymerizable moiety, preferably an acrylate or methacrylate group;

R_x, R_y, R_z

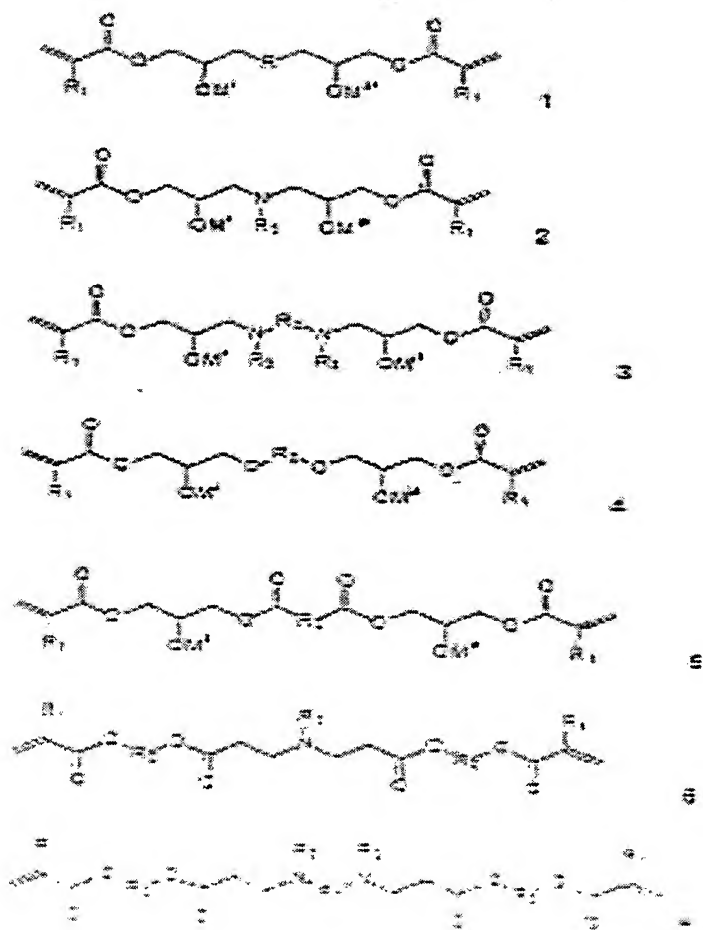
which may be the same or different independently represent substituted or unsubstituted C1 to C18 alkoxy, C5 to C18 cycloalkoxy, a C5 to C15 aryloxy, C2 to C18 acyloxy or halogen;

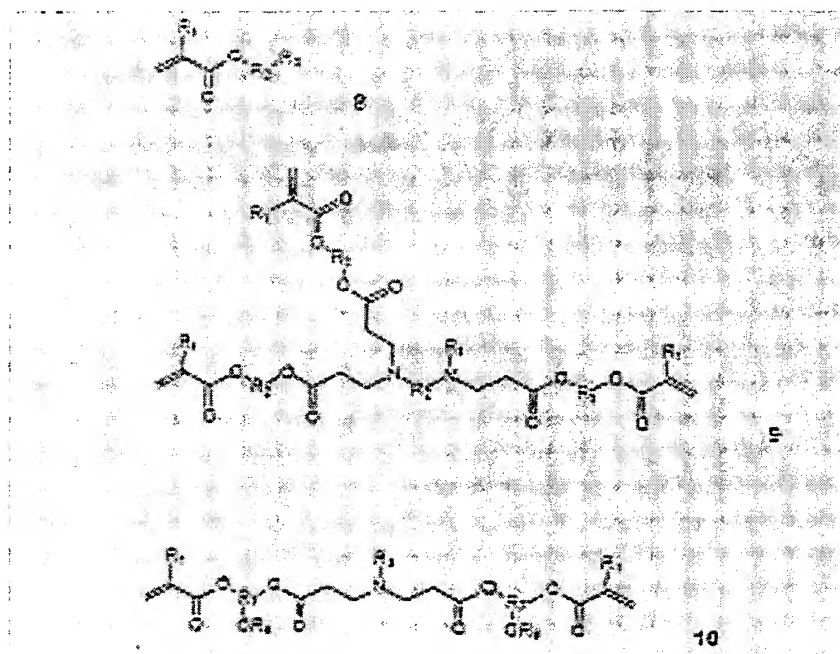
X is a nitrogen atom or a substituted or unsubstituted C1 to C18 alkylene, C1 to C18 oxyalkylene or C1 to C18 carboxyalkylene group;

Y is a substituted or unsubstituted C1 to C18 alkylene, C1 to C18 oxyalkylene, C5 to C18 cycloalkylene, C5 to C18 oxycycloalkylene, C5 to C15 arylene, or C5 to C15 oxyarylene or heteroarylene group; and

n is an integer of 1 to 10.

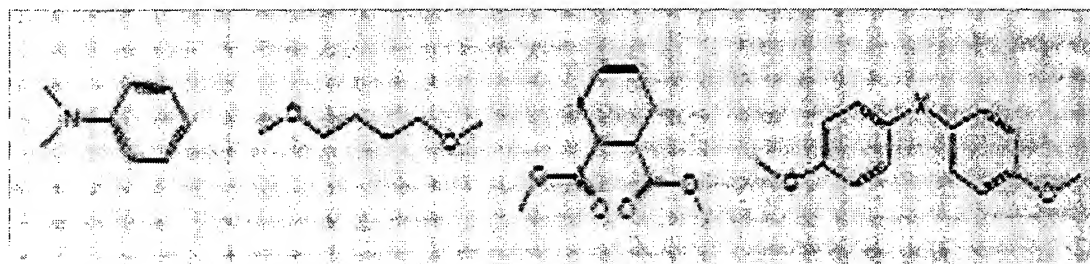
Claim 5 (Currently Amended): The process according to claim 1, wherein the hybrid monomer compound is a compound of the following formulas 1-10:





wherein

R is a residue derived from a diepoxide, notably a residue of the following formula

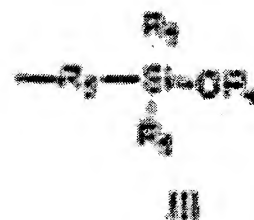
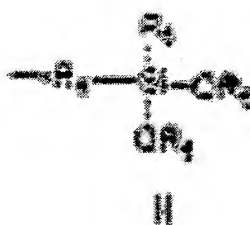
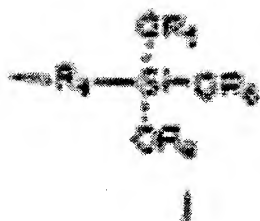


wherein X is C(CH₃)₂, -CH₂-, -O-, -S-, -CO-, or -SO₂-;

R₁ is hydrogen or a substituted or unsubstituted C₁ to C₁₈ alkyl, C₅ to C₁₈ cycloalkyl, C₅ to C₁₈ aryl or heteroaryl group;

R2 is a divalent substituted or unsubstituted C1 to C18 alkylene, C2 to C12 alkenylene, C5 to C18 cycloalkylene, C5 to C18 arylene or heteroarylene,

R3 which may represent the same or different substituents in formula 3 and 7, is a substituted or unsubstituted C1 to C18 alkyl, C2 to C12 alkenyl, C5 to C18 cycloalkyl, C6 to C12 aryl or C7 to C12 aralkyl group, or a siloxane moiety represented by one of the following formulae I, II or III



wherein

R5 is a divalent substituted or unsubstituted C1 to C18 alkylene, C2 to C12 alkenylene, C5 to C18 cycloalkylene, C5 to C18 arylene or heteroarylene group, preferably CH₂CH₂CH₂,

R6 is a substituted or unsubstituted C1 to C18 alkyl, C2 to C12 alkenyl, C5 to C18 cycloalkyl, C6 to C12 aryl or C7 to C12 aralkyl group,

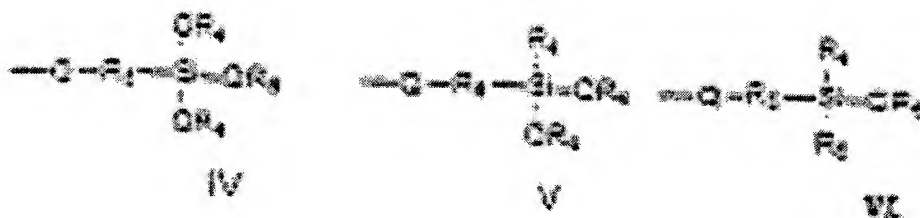
R7 is a substituted or unsubstituted C1 to C18 alkylene, C2 to C12 alkenyl, C5 to C18 cycloalkylene, C5 to C18 arylene or heteroarylene group,

R8 is a protecting group for a hydroxyl group, preferably forming an ether, an ester or an urethane group,

M' and M''

which may represent the same or different substituents, is a siloxane moiety represented by one of the following formulae IV, V or VI, a protecting group for a hydroxyl group,

preferably forming an ether, an ester or an urethane group, or hydrogen in case R3 is a siloxane moiety represented by one of formulae I, II, or III as defined above,

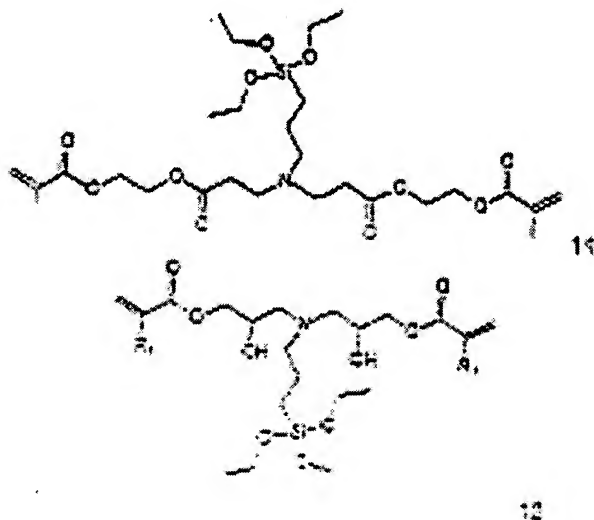


wherein

Q is an ether, an ester, a urethane or thiourethane linking group, and

R5 and R6 are as defined above.

Claim 6 (Previously Presented): The process according to claim 1, wherein the hybrid monomer component comprises a compound of the following formula 11 or 12:



Claim 7 (Currently Amended): The process according to claim 1, wherein said polymerizable monomer is a mono- or polyfunctional acrylate or methacrylate, selected from the group of methyl methacrylate, ethyleneglycol dimethacrylate, diethyleneglycol dimethacrylate, triethyleneglycol dimethacrylate, 3,(4),8,(9)-dimethacryloyloxymethyltricyclodecane, dioxolan bismethacrylate, vinyl-, vinylen- or vinyliden-, acrylic- or methacrylic substituted spiroorthoesters, spiroorthocarbonates or bicycloorthoesters, glycerin trimethacrylate, trimethylol propane triacrylate, furfurylmethacrylate.

Claim 8 (Previously Presented): The process according to claim 1, wherein the nanoparticles are formed in the presence of metal compounds selected from the group of alkoxides or metal complexes such as metal acetyl acetonates whereby the metals are selected from the group of Ba, Al, La, Ti, Zr, Tl, In or other transition elements or elements of the lanthanides or actinides.

Claim 9 (Previously Presented): The process according to claim 1, further comprising the step of adding an inorganic filler selected from La_2O_3 , ZrO_2 , BiPO_4 , CaWO_4 , BaWO_4 , SrF_2 , Bi_2O_3 , a porous glass or an organic filler, such as polymer granulate, embrittled glass fibres or a combination of organic and/or inorganic fillers or reactive inorganic fillers.

Claim 10 (Previously Presented): The process according to claim 1, further comprising the step of adding a polymerisation initiator and a stabiliser

Claim 11 (Previously Presented): The process according to claim 1, wherein hydrolysis is carried out in the presence of a catalyst.

Claim 12 (Previously presented): The process according to claim 12, wherein the catalyst is an acid or base.

Claim 13 (Previously Presented): The process according to claim 1, wherein hydrolysis is carried out under neutral conditions.

Claim 14 (Previously Presented): The process according to claim 1, wherein the composition comprises a polymerizable di- or poly(meth)acrylate, at least a polymerizable monomer, polymerisation initiators and/or sensitisers and stabilisers.

Claim 15 (Previously Presented): The process according to claim 1, wherein hydrolysis is carried out in the presence of an organic solvent such as THF, dioxane, chloroform, toluene, acetone.

Claim 16 (Previously Presented): The process according to claim 1, wherein hydrolysis is carried out in the presence of polymerizable monomers such as methyl methacrylate, ethylene glycol dimethacrylate, diethylene glycol dimethacrylate, triethylene glycol dimethacrylate, trimethylol propane triacrylate, 3,(4),8,(9)-dimethacryloyloxymethyltricyclo decane, dioxolan bismethacrylate, glycerol trimethacrylate, furfuryl methacrylate.

Claim 17 (Previously Presented): A polymerizable dental composition obtainable according to the process of any one of claim 1.